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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,472	03/30/2001	Thomas E. Willis	42390.P8930	6094

7590

09/19/2002

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EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 09/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/823,472

Applicant(s)
Willis et al.

Examiner
Gary J. Portka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Mar 30, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 24-36 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Mar 30, 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

1. Claims 1-36 are presented for examination.

Specification

2. The disclosure is objected to because of the following informalities:
 - a. There appear to be words missing at the end of the Abstract.Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-22 and 28-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Frank et al., U.S. Patent 5,893,166.
5. As to claims 1-12, and 31-34 Frank discloses a method, executable code for transparently sharing virtual address translations, by accessing a translation and identifying if it is sharable (see Abstract, Figures 4A-8, column 3 line 66 to column 4 line 21, column 8 lines 20-49, and in particular column 9 line 66 to column 10 line 31; the protection status code identifies if the translation is sharable, and this procedure is transparent to the OS to the extent claimed, since once the shared space is designated the OS is not involved in the accessing/identification of a translation).

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6. As to claims 13, 15, 19-22, and 28-30 Frank discloses processors and logical processors as recited (see column 6 lines 23-28, and column 7 lines 4-10).

7. As to claim 14, multiple logical processors on the same die is disclosed since a single processor running multiple processes is contemplated.

8. As to claim 16-18, a shared cache is provided since memory 102 may be SRAM, which any case may be seen as a cache for data storage 104 (Figure 2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 24-27 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al., U.S. Patent 5,893,166, in view of Schimmel, U.S. Patent 6,105,113.

11. As to claims 24-27, 35-36, Frank does not disclose a TLB which stores the indication. However, the use of TLBs as a cache for address translations was well known in the art to improve translation speed. Schimmel teaches a TLB consistency mechanism using cache consistency techniques (see Abstract and Summary, columns 3-4); clearly these consistency techniques include the incorporation of the shared indication when applied to the Frank system, because typical cache consistency techniques include shared indications, as for example in the

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MESI protocol. An artisan would have been motivated to add a TLB to the system of Frank to improve the translation speed, and would have been motivated to store the shared indication with the entries in the TLB to achieve consistency across system translations in accordance with cache consistency mechanisms. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to add a TLB storing the shared indications, because this would have improved the translation speed and provided translation consistency.

Allowable Subject Matter

12. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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6,289,432 B1 Sharing segments by enabling shared page tables.

6,260,131 B1 Global or multiple distributed TLBs with shared knowledge.

6,085,296 Sharing page tables using the page sharing mechanisms.

14. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in Abandonment of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

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15. Any inquiry concerning this communication from the examiner should be directed to Gary J. Portka at telephone number (703) 305-4033. The examiner can normally be reached on weekdays from 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do Yoo, can be reached at (703) 308-4908.

Any response to this action should be mailed to (or faxed as provided below):

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Fourth Floor (Receptionist).

The fax phone number for the organization where this application or proceeding is assigned are as follows:

(703) 746-7238	(After Final communications)
(703) 746-7239	(Official communications)
(703) 746-7240	(Status inquiries, draft communications)

Any inquiry of a general nature relating to this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 305-3900.

Gary J. Portka
Patent Examiner



September 16, 2002